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The development and evaluation of a common assessment form for physiotherapy practice education in Ireland.

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All eight authors were members of the Common Assessment Form sub-committee of Chartered Physiotherapists in Educaton which had a rolling chair and secretary system.

Keywords

Physiotherapy, placement, assessment,

Summary

A sub-group of Chartered Physiotherapists in Education (CPE) was formed in 2004 to consider the adoption of a common assessment form (CAF) for assessing practice education placements for students studying physiotherapy in the Republic of Ireland. Following agreement from the four heads of department, the needs of users (academic staff, practice tutors and practice educators) were established. As none of the existing forms met sufficient needs of the users, a new CAF was developed.

The top features required by practice educators/tutors and HEIs, the positives of the existing forms and the behaviours indicated in the work of Cross & Hicks1 were taken into account when developing the CAF. Following extensive revisions it was piloted on a small number of sites, revised by the committee and then validated by comparing scores to those of the existing assessment forms. Its inter-rater reliability was established by comparing students' grades between practice educators and practice tutors. Construct validity (PCC 0.906) and reliability estimates (ICC 0.84) were found to be satisfactory. As the validity and reliability of the CAF was found to be satisfactory and greater than that of existing forms, the CAF was adopted by all for HEIs for use in summer 2007.

Introduction

The purpose of this paper is to describe the development of a Common Assessment Form for assessing students from a number of Higher Education Institutes (HEIs) on practice education placements. This information may be of interest to those now using the CAF, and to those from other professions or other groups of HEIs who may wish to embark on a similar process.

A sub-group of members of CPE formed a committee in 2004 to consider the adoption of a CAF for assessing students on practice placements. The committee was formed in response to requests from practice educators and the National Planning Groups "Action framework for clinical placements in Occupational Therapy, Physiotherapy and Speech and Language therapy"[2].

The committee met first in August 2004 and comprised of one representative from each of the four HEIs with a rotating chair and secretary system. Composition of the committee expanded to two representatives from each HEI over the lifetime of the committee. The four HEIs offering undergraduate degrees in physiotherapy in the Republic of Ireland are Royal College of Surgeons in Ireland (RCSI), Trinity College Dublin (TCD), University College Dublin (UCD) and University of Limerick (UL). The CAF committee met on a total of ten occasions (one of which was a video conference between Limerick and Dublin) over a period of three years, with communication via group e-mail in between meetings.

The three actions from the action framework document[2] to be considered by this group were:

- Action 1.1 – Design a national evidence based system for the assessment of student clinical placements
- Action1.2 – Agree benchmark statements of required clinical placement outcomes specific to each profession
- Action 3.2 - Establish an appropriately standardised approach to student assessment to safeguard objectivity of the assessment process.

Agreement in principle from the heads of physiotherapy in the four HEIs that a CAF should be pursued was reached after the first three meetings. Existing practice education assessment forms were compared and contrasted and in principle the committee agreed that following establishment of the needs of the users (academic staff at the HEIs and practice educators/tutors) the form that best met the needs of users would be adopted.

This paper will describe the process of development of the CAF under the following headings: establishing user needs, developing a new CAF, establishing validity of CAF, evaluating reliability of the CAF and Conclusions.

Establishing user needs

Methodology

In order to assess the needs of practice educators and practice tutors from a practice education assessment form, a questionnaire was developed by the CAF committee. (Appendix 1). Following initial pilot on two educators and approval/amendments by the CAF committee, it was forwarded to the four HEIs to distribute to a sample of convenience of their experienced practice educators.

To establish the needs of the HEIs from a clinical placement assessment form, the question was raised at each HEI's staff meeting and consensus as to the most important features was achieved by the CAF committee at a subsequent meeting.

Results

Fifty-four questionnaires were returned by practice educators for analysis. Of those eight used only the RCSI form, 15 used the TCD form only, five used the UCD form only, eight used the UL form only and 18 used more than one form. Fifty-three out of 54 (98%) were in favour of the four HEIs adopting a CAF. The majority of respondents were familiar or very familiar with the forms that they used, reflecting the sample of convenience of experienced educators to whom the questionnaire was forwarded to. The main themes in the open ended question as to why the educators wanted a CAF were: that it would standardise grading and increase reliability across the four HEIs (54%), and that it would make grading easier for clinical sites that had students from more than one HEI (31%).

The main theme arising from the "likes" of the current forms were that the RCSI, UL and TCD forms had clear behaviours/learning outcomes to aide marking. The main themes arising from the "dislikes" of the existing forms were that some sections of the RCSI form were not marked out of 100, that some of the TCD forms behaviours were subjective, that the UCD form did not consider the changing level of the student and that the UL form was time-consuming.

Respondents were asked to rank the important features of a CAF, the most frequently cited features are reported in table 1.

Feature	No of respondents
Clarity of the form or clear guidelines for using the form	n=24
Eease of use or readability	n=22
Contained the behaviours required of the student	n=16
Considered learning outcomes	n=13
Had a midway assessment	n=16
Short time to complete	n=11
Distinguished between different levels of students	n=11
Had room for comments	n=9
Considered all clinical areas	n=8

Table 1: Top 9 features of a Common Assessment Form listed by clinicians.

Those that used more than one form were asked to rank them in order of their preference; there was no clear trend for one form over another from the results of this question.

The main features required by the HEIs were: user friendly, not lengthy, evidence based, assessed the domains of patient management, professionalism, documentation, communication, and safety, had an overall pass/fail on safety issues, and was easy to mark (i.e. out of 10 or 100)

Assessing ability of existing forms to meet user needs

Using the nine features that clinicians thought were required and the 10 required by the HEIs, each of the four existing assessment forms was rated to establish which of the four existing forms should be adopted (scored 1 if it met that criteria). One person from each HEI and three independent raters (the president of the ISCP, the CSP's education officer and a lecturer from UUJ) were asked to score each form on its ability to meet the 19 criteria.

The average score out of 19 for the TCD form was 15.5, RCSI 13.3, UL 13.2 and UCD 12.5. The form that best met the clinicians' needs was the TCD form scoring 53/70, with the UL form best meeting the needs of the HEIs scoring 45/70. Following extensive discussions by the CAF committee it was concluded that none of the existing forms met sufficient numbers of the HEIs and clinicians' requirements to be adopted by all four HEIs. It was decided that a new form should be developed using the best features of the existing forms while retaining the ability to detect between the different levels of students.

Development of the new CAF

One of the key features required by both the HEIs and the practice educators/tutors was that there was an ability to distinguish between level of student, therefore the framework of the UL form (based on Physiotherapy Placement Information Management System form) was used, with one form for each of three levels of placement. Firstly 10 learning outcomes were developed, then behaviours indicative of competency of that learning outcome, then criteria for marking that behaviour. The learning outcomes remain the same for each level, with the behaviours progressively increasing in complexity or detail for each level of the form.

The existing forms were compared and contrasted to find the common themes or 'sections' of the student evaluation. Common to all four forms was a section on Interpersonal or Communication skills a section on Professional Behaviour/Development and a section on Patient Treatment/Management. Common to three forms was a section on Documentation. Common to two forms was a patient assessment section and to the other two forms a section on Clinical Reasoning/Problem Solving. Based on this information and the sections rated as important by clinicians, the five sections of the new CAF were decided to be Patient Assessment, Patient Treatment/ Management, Professionalism and Documentation and Communication. The latter two sections, when brainstormed, revealed five clear learning outcomes for

each, and were therefore scored out of 50 each. All other sections revealed a greater number of outcomes (ten for each section) and therefore were scored out of 100.

One committee member took the lead for each section. Using the principles of adopting the positive aspects of the existing forms, the needs of the clinicians and HEIs and the work of Cross & Hicks[1] the learning outcomes, behaviours and marking criteria were developed. Agreement on wording was achieved through brainstorming, reviewing, and revisions over a period of four meetings. Consensus agreement was reached on each learning outcome and behaviour. The CAF was piloted by two representatives from each HEI, one representative who was on the committee, and another who was a practice tutor for that HEI. The aim was to assess the CAF by comparing it with the existing form. Key areas assessed were, whether it covered all areas previously covered by the existing forms and the users needs, its ease of use, time taken to complete the form compared to the existing form, and how results achieved from the CAF compared with the existing form when completed by each assessor on a small sample of students. Any new suggestions or comments were raised at the subsequent committee meeting and changes were made, again based on consensus agreement.

Establishing Validity of the CAF

"Validity is the property of the measure that considers its content, the populations for which it may be used and the interpretation that can be applied to its output".[3] In simple terms validity assesses the extent to which the measure evaluates what it is meant to. Validity can be expressed as face, content, criterion or construct validity. Face validity refers to the clinical credibility of the measure simply by examining the elements of the measure and their relationship to the desired attribute being measured. Content validity refers to whether the measure has examined all aspects of the attribute.

The face and content validity of the CAF is high as the series of learning outcomes and behaviours refer to those expected of physiotherapy students on placement that are based on existing forms, the needs of HEIs and practice educators/tutors and the work of Cross & Hicks[1] and were developed by members of CPE with considerable experience, both in the academic and clinical setting.

As the four existing forms had been found to be inadequate, there was no "gold standard" with which to compare, eliminating the possibility of assessing criterion validity, therefore the construct validity of the form was assessed.

Methodology for validity study

The construct validity was assessed by comparing the results of the CAF with the results of the existing forms and questioning a number of hypotheses namely:

- That there is a linear relationship between existing form scores and CAF scores, thus the form has an ability to distinguish between high and low performing students (cross-sectional, convergent validity)
- That the CAF would not score consistently higher or lower than any of the existing forms.
- That the strongest relationship should be with the UL form as it also considers three levels of behaviours (cross-sectional, discriminant validity)
- That there would be the strongest relationship between the existing forms which consider one level and the level three CAF (cross sectional, discriminant validity).

Two experienced practice tutors from each HEI graded the student at the end of the placement on the existing form for that college and the new CAF. The CAF mark was used for study purposes only and the student was awarded the grade using the existing forms.

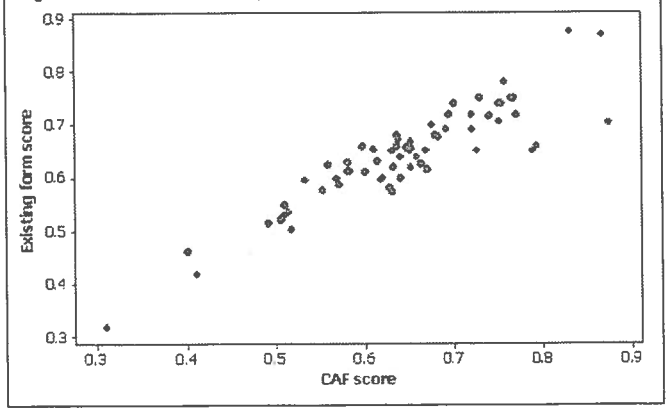
The data was entered into an Excel spreadsheet and transferred to Mintab v.14. The data was analysed by plotting the data on a scatter plot and calculating Pearson's correlation coefficients (PCC).

Results

Seventy-one sets of data were returned for analysis, 33 from TCD (15 level three CAF, 18 level one CAF), 16 from UCD (eight level one, eight level two), 10 from RCSI (seven level three, three level two) and 12 from UL (five level one, three level two, four level three).

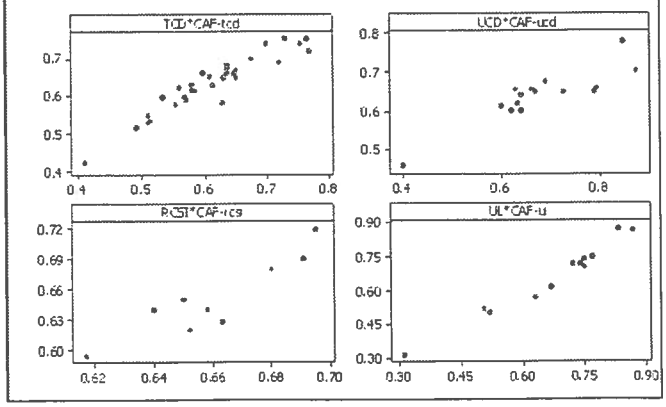
Figure 1 shows the plot of the CAF score and existing form scores. The Pearson correlation coefficient (PCC) was 0.906 indicating a strong linear relationship between the scores and confirming hypothesis one. Thirty CAF scores were higher than the existing form, 35 CAF scores were lower, six CAF scores were equal, indicating that there was no systematic shift in scores and confirming hypothesis two.

Figure 1: Linear relationship between existing form score and CAF score

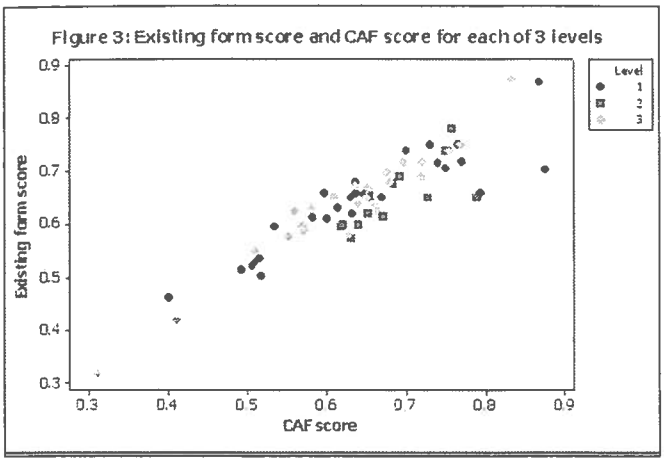


The overall correlation of the CAF with the UCD form was 0.885, with the RCSI form was 0.902, with the TCD form was 0.943, and with the UL form was 0.983. This

Fugire 2: Linear Relationship between existing HEI forms and CAF



suggests that the strongest correlation was with the UL form, which also considers three levels confirming hypothesis three.



When considering the linear relationship between the marks from three levels of the CAF and the existing forms, the following PCCs were found. Level one and existing, 0.902, level two and existing 0.703 and level three and existing 0.966. The highest correlation was between level three and the existing forms confirming hypothesis four.

The results of the validity study suggested that the CAF has good face, content and construct validity and was therefore a valid tool for assessing the behaviours of students on clinical placement

Evaluating Reliability of the CAF

Methodology

In order to assess the inter-rater reliability of the CAF, a practice tutor and a practice educator rated the same student on the CAF at the end of a placement. The assessment was completed independently by the two educators and the results forwarded for analysis.

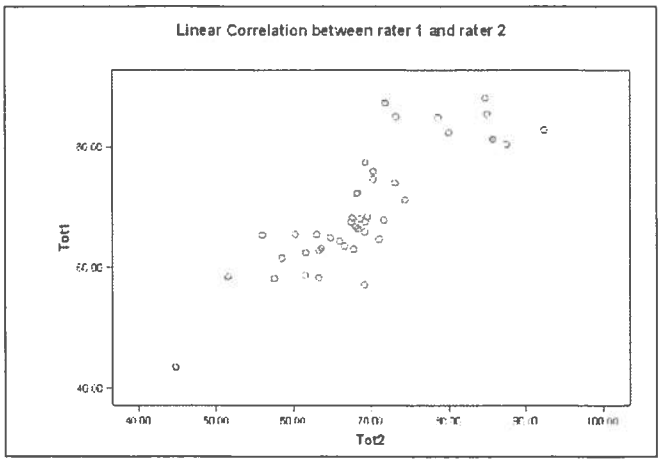


Figure 4. Linear Correlation between rater 1 and rater 2 for CAF reliability study.

Data was entered into an Excel spreadsheet and sections not marked out of 50 or 100 were converted to a mark out of 50 or 100 (this occurs as some learning outcomes are not applicable on certain placements). Data was transferred to SPSS for analysis. The reliability was calculated using type C Intraclass Correlation Coefficients (ICC's) and the Bland and Altman method was used to quantify the mean differences between scores.

Results

A total of 43 data sets were returned for analysis, 16 from TCD (all level two), eight from UCD (all level three), 13 from RCSI (three level two, nine level three) and seven from UL (two level two, five level three).

Figure 4 shows the linear relationship between rater one and rater two for the total score

The estimates for the ICC's and Bland and Altman analysis are presented in Table 2. The ICC for the total suggests a high level of reliability. The section with the lowest correlation coefficient and the widest limits of agreement is the assessment section.

Table 2.

Values for Intraclass correlation coefficients (ICC), Confidence Intervals for ICC (CI ICC), the mean difference between the raters scores (_), the standard deviation of the differences (s), and the upper (ULOA) and lower (LLOA) limits of agreement

	ICC	CI ICC	_	s	ULOA	LLOA
Total Score	0.84	0.723, 0.910	0.6433	5.3567	-10.0701	11.3567
Assessment	0.665	0.459, 0.804	-0.6326	7.85347	-16.33954	15.07434
Treatment	0.788	0.641, 0.879	0.08093	5.95966	-11.83839	12.00025
Professionalism	0.784	0.634, 0.877	1.493	6.63908	-11.78516	14.77116
Documentation	0.826	0.701, 0.902	-0.0023	3.77104	-7.54438	7.53978
Communication	0.735	0.560, 0.847	0.9057	4.42503	-7.94436	9.75576

When the total score was converted to the grade band (i.e. first, 2:1 etc) there was agreement on the band in 63% of cases. Of the remaining cases 11.6% had a lower band and 25.6% of cases had a higher band.

Discussion

The values for the ICCs suggest a good relationship between the two raters and are higher than that obtained for the total scores on the RCSI form[4] which was 0.79. The mean differences between the raters are also low, supporting the results from the correlation analysis. However, the standard deviation of the differences is high, with relatively large limits of agreement. The total score is the most pertinent as it is this that is used to calculate the overall mark for the placement which is converted to the band and used towards the final degree classification of the student. The ICC and LOA's for the total score suggest good reliability despite relatively large limits of agreement. It is possible that with a larger sample the standard deviation would be lower hence narrowing the limits of agreement. There was band agreement in 62% of cases, which is lower than that for the RCSI study which had agreement in 75% of the cases. This study was completed with informal training by the tutor for the educator and it is possible that with the national roll-out of the form and formal, uniform training in the use of the form that the reliability estimates will improve.

Summary and Conclusions

This paper has outlined the three-year process involved in developing and evaluating the CAF for physiotherapy practice education in Ireland. Following the establishment of the needs of practice educators and academic staff at the HEIs the existing forms were rated. As none of the existing forms met sufficient criteria for adoption by all four HEIs a new form was developed based on the findings from the users (clinicians and HEIs) needs, the positive aspects of the existing forms, and the work of Cross & Hicks1.

Consensus agreement was reached by the committee as to the learning outcomes, behaviours and assessment criteria contained in the CAF, which had several revisions at committee level and was modified following a pilot study. The validity study suggested good face, content and construct validity and the correlation coefficients and means of the differences between scores suggest high reliability. The possibility of systematically higher scoring by the practice educators warrants further investigation. The CAF committee met to consider the roll out of the form to the wider community and to take on board the suggestions made by the users and further minor modifications were made.

Glossary of terms used

Practice Educator: The senior or experienced clinician responsible for the student whilst on placement.

Practice Tutor: The HEI affiliated tutor who provides education for all students at that clinical site or at several sites.

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